

REMARKS

The Applicants appreciate the quick and courteous restriction requirement.

Claims 1-20 remain in the application.

Claim 1 is amended.

Claims 1-12 are elected.

Claims 13-20 are non-elected and withdrawn.

Restriction Requirement

The Applicants appreciate the Examiner's acknowledgment of Applicants' election without traverse of claims 1-12 in the reply filed on 27 August 2010.

Priority

The Applicants also appreciate the Examiner's acknowledgment of the receipt of the priority documents.

35 U.S.C. §102(b) Rejection

The Examiner has rejected claims 1-12 under 35 U.S.C. 102(b) as allegedly being anticipated by Johannes, US Patent 4053142.

Regarding claims 1 and 2, the Examiner contends that Johannes '142 teaches an apparatus for enhancing solubility of a solute in a solvent (abstract; col. 1, line 64 - col. 2, line 13), the apparatus comprising a solvent and/or solute inlet (18 of figure 1; col. 2, lines 54-68) having a fluidizing unit which creates a vortex in the solute or solvent (22 of figures 1-2; col. 2, lines 34-53), as in claim 1; and in which a fluid interfacial or boundary layer exists within the vortex where enhances mass transfer, or dissolution of solute into the solvent takes place (abstract; col. 1, line 64 - col. 2, line 13), as in claim 2.

Other details of the Examiner's rejection may be had with reference to the 35 U.S.C. §102(b) rejection on pages 2-4 of the non-final Office Action dated 14 September 2010.

The Applicants respectfully traverse. A patent claim is anticipated, and therefore invalid, only when a single prior art reference discloses each and every limitation of the

claim. *Glaxo Inc. v. Novopharm Ltd.*, 52 F.3d 1043, 1047, 34 U.S.P.Q.2d 1565 (Fed. Cir.), cert. denied, 116 S.Ct. 516 (1995).

The Examiner contends that Johannes discloses that his nonmechanical shearing mixer creates a vortex. The Applicants respectfully submit that this is factually incorrect.

Johannes only describes the existence of vortexes in the discussion of prior art. In column 1, lines 32-41, Johannes discusses U.S. Pat. No. 2,653,801 and states: “Since only one of the liquid components undergoes a cyclonic flow pattern, the ‘passive’ liquid added to the *vortex* readily flows with the rotating liquid, thereby *reducing mixing effectiveness*” (emphasis added) where it is clear that Johannes finds the adding of a passive liquid to the vortex as having reduced mixing effectiveness. Further, in column 1, lines 42-57, Johannes notes “U.S. Pat. No. 3,261,593 discloses fluid mixing apparatus wherein a first liquid enters a first cylindrical chamber through a first tangential inlet tube, the first liquid thus creating a *swirling vortex* in the first chamber.” (Emphasis added.) Thus, the Applicants respectfully submit that Johannes was well aware that mixing apparatus such as these prior art devices may create a vortex, but Johannes does not disclose, hint or suggest that his shearing mixer creates a vortex, directly contradicting the Examiner’s assertion. If his mixer created a vortex Johannes would certainly have known and described it as such.

Because the original claim language specifically requires “a fluidising unit which creates a vortex” and the single prior art reference does not disclose this limitation, the present rejection must fail for this reason alone.

Further evidence that a vortex is not created by the Johannes mixer may be seen with reference to what *is* created by the Johannes mixer. The Applicants respectfully direct the Examiner’s attention to the Abstract of Johannes:

A nonmechanical shearing mixer uses fluid velocity to create sufficient turbulence to completely mix two fluid components. Mixing is accomplished in an annular mixing chamber defined by inner and outer cylindrical walls. A first fluid is forced under pressure outwardly through openings in the inner cylindrical wall, the openings being oriented and arranged to cause the first fluid passing therethrough to undergo a generally rotational fluid flow pattern in the annular mixing chamber. A second fluid entering the annular mixing chamber through openings in the outer cylindrical wall is similarly caused to undergo a generally rotational fluid flow pattern but in the opposite direction of the rotational fluid flow pattern of the first fluid. *The two opposing rotational fluid flow patterns thus “clash” in the annular mixing chamber and*

create a large amount of turbulence and shearing action resulting in effective and complete mixing of the two fluids. The mixed fluid components are continuously discharged from the annular mixing chamber. (Emphasis added.)

Johannes explicitly discloses “two opposing rotational fluid flow patterns [which] thus ‘clash’ in the annular mixing chamber and create a large amount of turbulence and shearing action resulting in effective and complete mixing of the two fluids”. Thus, no vortex is created, simply two opposing rotational flow patterns that “clash” and create a large amount of turbulence and shearing action.

The Examiner’s attention is additionally directed to column 2, lines 54-58 of Johannes which presents a similar disclosure, although different words are used: “In the annular mixing chamber **10**, therefore, the rotational fluid flow patterns of the first and second fluid components (clockwise and counter-clockwise respectively) *crash head on and create a tremendous amount of shearing turbulence.*” (Emphasis added.) Again, there is no disclosure that a vortex is created, but what is disclosed as created is a “tremendous amount of shearing turbulence” caused by “the first and second fluid components (clockwise and counter-clockwise respectively)” crashing head on. This is not the claimed apparatus, which apparatus creates a vortex.

Additionally, the Applicants respectfully direct the Examiner’s attention to the fact that claim 1 herein has been amended to recite “one vortex”. Support for this claim amendment may be found in Figure 4 where only one inverted vortex is shown. The Examiner’s attention is respectfully directed to page 12, lines 24-25 of the instant application which also provides support for this amendment: “Figure 4 is a CFD image of the inverted vortex flow from 25 fluidising apparatus of Figure 1”, as well as page 14, lines 16-28:

Figure 4 shows that the *swirling exiting fluid* (solvent) from the HydroTrans head produces an inverted *vortex at the entry to the discharge pipe*, which is considered to be fairly stable under normal velocity flow conditions, resulting in enhanced mobilisation of solids surrounding the HydroTrans head. The vortex generally has a low pressure core or zone compared to that of the rotating liquid around it (see Figure 3). This can create a boundary layer of liquid rotating around this core where the core’s pressure may be close to the vapour pressure of the liquid (solvent) being used thus allowing the water at this point to become excited leading potentially to cold boiling. (Emphasis added.)

Thus, this amendment does not constitute improper insertion of new matter.

As noted, Johannes discloses not one but *two* rotational fluid flow patterns which are opposing to one another and “clash” or “crash” into one another, creating a large amount of turbulence, but *not* creating a vortex. Thus, the Applicants respectfully submit that Johannes does not disclose each and every limitation of the amended claims for this additional reason taken alone, and especially when taken together with the distinction previously established above.

The Applicants additionally respectfully direct the Examiner’s attention to the fact that claim 1 has also been amended herein to recite that the vortex created is of rotating flow, and which vortex of rotating flow is between the fluidising unit and the discharge pipe (in one non-limiting embodiment, discharge pipe **130**). Support for this final amendment language may be found with reference to the application as originally filed, page 14, lines 16-28, as quoted immediately above, and also with respect to Figures 3 and 4, and thus this amendment also does not constitute improper insertion of new matter.

Thus, claim 1 now requires that the fluidising apparatus creates one vortex of rotating flow in the solvent and/or solute between the fluidising unit and the discharge pipe, which such vortex Johannes is completely silent upon, even though he was aware that prior mixing apparatus created swirling vortexes. The Applicants respectfully submit that because Johannes was acquainted with vortexes, as shown by his descriptions of them with respect to the prior devices, he would have realized if his shearing mixer created one, and would have described it as such. However, since it is not described, one having ordinary skill in the art must thus conclude that the Johannes mixer does not create vortexes of any kind, much less the type described in the amended claim. The *absence* from the reference of an explicit claim requirement cannot be reasonably construed as establishing that the requirement is in the reference, see *In re Evanega*, 829 F.2d 1249 (Fed. Cir. 1987).

The Applicants thus respectfully submit that Johannes does not teach or disclose “a fluidising unit which creates one vortex of rotating flow in the solvent and/or solute between the fluidising unit and a discharge pipe” as required by amended claim 1 (and thus all claims dependent thereon), and thus because the single prior art reference does not disclose each and every limitation of the amended claim in these several aspects, the

Applicants respectfully submit that the instant rejection should be withdrawn. Reconsideration is respectfully requested.

Information Disclosure Statement Under 37 CFR §1.56

The Information Disclosure Statement transmitted herewith is being filed *after* the mailing date of a first Office Action but *before* the mailing date of either a final Action under §1.113 or a Notice of Allowance under §1.311, whichever occurs first. All but three documents are in English and thus no translation or explanation of their relevance is necessary. With respect to the three non-English documents, these are believed relevant because they were cited in the International Search Report for the corresponding PCT application for US 2008/0044238 A1, which application has a common inventor with the present application.

Accompanying this transmittal is the fee set forth in 37 CFR §1.17(p) for submission of an Information Disclosure Statement under §1.97(c). Consideration of the art by the Examiner is respectfully requested.

It is respectfully submitted that the amendments and arguments presented above place the claims in condition for allowance. Reconsideration and allowance of the remaining claims are respectfully requested. The Examiner is respectfully reminded of his duty to indicate allowable subject matter. The Examiner is invited to call the Applicants' attorney at the number below for any reason, especially any reason that may help advance the prosecution.

Respectfully submitted,
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